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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,441	04/12/2007	Klaus Ruppert	100727-103 KGB	3701
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EXAMINER				
REDDY, KARUNA P				
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1796				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/583,441

Applicant(s)

RUPPERT ET AL.

Examiner

KARUNA P. REDDY

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF 298)
Paper No(s)/Mail Date 6/16/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

1. Preliminary amendment filed on 6/16/2006 is made of record. Claims 1-2 and 4-15 are amended. Accordingly, claims 1-15 are currently pending in the application.
2. It is noted that claim 2 does not include the claim identifier required under 37 CFR 1.121. Applicant is advised to use the appropriate claim identifier. See MPEP § 714 [R-6].

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claims 14 and 15 recite "A fissure sealant comprising a dental material according to claim 1" and "A protective dental lacquer for a surface treatment of natural teeth comprising a dental material according to claim 1" respectively. Claim 6 recites "wherein the silver particles are modified on a surface". These features are not in the specification portion of application.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for acrylate-based monomers (i.e. polymerizable), does not reasonably provide enablement for any polymerizable material. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with this claim.

Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]" *Ex parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. App. Inter. 1989) otherwise undue experimentation would be involved in determining how to practice and use applicant's invention. Although the statute itself does not use the phrase "undue experimentation", it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation as stated in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. Inter. 1986) and in *In re Wands*, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

Specifically, in *In re Wands* the Court set forth a non-exhaustive list of factors to be considered in determining whether undue experimentation would be involved in making and/or using the claimed invention. These factors include, but are not limited to : (a) the breadth of the claims; (b) the nature of the invention; (c) the state of the prior art; (d) the level of one of ordinary skill; (e) the level of predictability in the art; (f) the amount of direction provided by the inventor; (g) the existence of working examples; and (h) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.

Applying these factors to claim 1, it is noted that the specification provides no direction or working examples (cf. factors (f) and (g)) for any polymerizable material

other than those using acrylate based monomers. Thus, the only portions of the specification that describe the polymerizable monomer recited in claim 1 are paragraph [0025] and this paragraph names only acrylate based monomers (i.e. polymerizable).

Furthermore, in view of the breadth of claim 1 (cf. factor (a)) which encompasses innumerable polymerizable materials such as amides, acids, alcohols etc., all of which are mutually structurally different, it is urged that the quantity of experimentation (cf. factor (h)) involved in order to reach a usable embodiment would be great. In light of the above factors, it is concluded that undue experimentation would be involved to make and use the invention as presently claimed.

6. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]" *Ex parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. App. Inter. 1989) otherwise undue experimentation would be involved in determining how to practice and use applicant's invention. Although the statute itself does not use the phrase "undue experimentation", it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation as stated in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. Inter. 1986) and in *In re Wands*, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

Specifically, in *In re Wands* the Court set forth a non-exhaustive list of factors to be considered in determining whether undue experimentation would be involved in making and/or using the claimed invention. These factors include, but are not limited to : (a) the breadth of the claims; (b) the nature of the invention; (c) the state of the prior art; (d) the level of one of ordinary skill; (e) the level of predictability in the art; (f) the amount of direction provided by the inventor; (g) the existence of working examples; and (h) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.

Applying these factors to claim 6 which recite "silver particles are modified on a surface thereof", it is noted that the specification provides no direction or working examples (cf. factors (e), (f) and (g)) for the surface modification of silver particles. Thus, the only portion that refers to surface modification of silver particles is in claim 6. In light of the above factors, it is concluded that undue experimentation would be involved to make and use the invention as presently claimed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 1-5 and 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen et al (US 6, 071, 528) in view of Hanke et al (US 2002/0122832 A1).

Jensen et al teach adhesive antimicrobial dental composition comprising alkyl methacrylates (i.e. reads on polymerizable material) and antimicrobial agent. The composition can be polymerized in situ and prevent ingress by microorganisms into an area of the tooth treated with composition (abstract). The adhesive antimicrobial and/or reparative dental compositions provide significant advantages over conventional dental compositions used as liners, pulp caps, base materials etc. (col. 4, lines 25-30). It is noted that anti-microbial dental composition is not applied to carrier or auxiliary substances (i.e. reads on claim 8). The composition is effective in sealing the treated substrate from ingress by bacteria and killing bacteria within the treated and sealed area (col. 4, lines 35-37). The components of composition can be in the form of emulsion, suspension or dispersion depending on the selection of preferred application (col. 7, lines 39-42) and reads on dispersion of claim 7.

Jensen et al are silent with respect to silver particles and wt% of silver particles; product of claims 9 and 11-15 comprising the dental material according to claim 1.

However, Hanke et al teach an anti-microbial composition comprising organic matrix containing homogeneously dispersed (i.e. reads on claims 4 and 5) particles of metallic silver having a particle size in the range of 1 to 50 nm (i.e. reads on particle size of silver nanoparticles in claims 1 and 3) and the composition can be used in dental products such as tooth brushes (abstract). It is already well known to use silver in various forms as an anti-microbial agent (paragraph 0003). Organic matrix comprises silver nanoparticles in an amount of from 1 to 2000 ppm (paragraph 0014) and reads on wt% of claim 2. The homogeneously dispersed silver nanoparticles have a particle size of 2 to 10 nm (paragraph 0015) and reads on particle size of claim 3. Reinfection of the gingiva caused by streptococci can be prevented by the presence of silver nanoparticles in tooth brushes (paragraph 0030). Since the particle size of silver nanoparticles dispersed is so small, there is no discoloration and infection of compositions by microorganisms can be safely prevented without disturbing the desired cosmetic effect (paragraph 0031). Therefore, in light of the teachings in Hanke et al, it would have been obvious to one skilled in art at the time invention was made to homogeneously disperse the silver nanoparticles of Hanke et al, in an amount of from 1 to 2000 pm, in the dental composition of Jensen et al for obtaining anti-microbial composition that can be used in an oral environment and the obtained product, while preventing infection by microorganisms such as streptococci, does not discolor because of the small particle size of silver nanoparticles. Furthermore, case law holds that the selection of a known material based on its suitability for its intended use (i.e. silver nanoparticles as anti-microbial agent) supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

With respect to product of claims 9 and 11-15 comprising the dental material according to claim 1, given that no further limitations other than the dental material according to claim 1 are recited in these claims, it is the examiner's position that it is an intended use and the anti-microbial dental composition of Jensen et al in view of Hanke et al meet limitations of the instantly claimed filling composite, prosthetic base material, artificial teeth, veneer composite, fissure sealant and protective dental lacquer.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen et al (US 6, 071, 528) in view of Hanke et al (US 2002/0122832 A1) as applied to claim 1, and further in view of Oh (KR 2002-043499 A).

The discussion with respect to Jensen et al in view of Hanke et al in paragraph 9 above is incorporated here by reference.

Jensen et al and Hanke et al are silent with respect to surface modification of silver nanoparticles.

However, Oh teaches surface treating silver nanoparticles with sulfur compounds to improve antibacterial property of silver nano-particles (abstract). Therefore, in light of the teachings in Oh, it would have been obvious to one skilled in art at the time invention was made to surface treat the silver nanoparticles of Jensen et al in view of Hanke et al, for further improving the antibacterial property of silver nanoparticles.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. P. R./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796